

### ABSTRACT

A laser and optical amplifier waveguide device with a plurality of layers that supports a single lowest-order optical mode with gain while higher order modes radiate and have a net loss. The supported lowest-order mode which has gain, has a mode cross section which is large compared to the operating optical wavelength in both the transverse and lateral directions. The contours of constant optical intensity of such lowest-order can be nearly circular, having an approximately elliptical shape with a small aspect ratio.